

# **PRESENTATION TO THE LANDSAT SCIENCE TEAM ON ACTIVITIES OF THE NGAC\* LANDSAT ADVISORY GROUP**

**Darrel Williams, for Kass Green (Sub-committee chair)  
Presented to Landsat Science Team  
@ USGS EROS Center  
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# NGAC

**The National Geospatial Advisory Committee (NGAC) is a Federal Advisory Committee sponsored by the Department of the Interior under the Federal Advisory Committee Act (FACA). NGAC reports to Chair of the Federal Geographic Data Committee (Sec. of the Interior or his/her designee).**

**The scope and objectives of the NGAC are described in the NGAC Charter: “The Committee will provide advice and recommendations related to management of Federal and national geospatial programs, the development of the National Spatial Data Infrastructure, and the implementation of OMB Circular A-16 and Executive Order 12906.**

**The Committee will review and comment upon geospatial policy and management issues and will provide a forum to convey views representative of non-federal stakeholders in the geospatial community.”**

# The Landsat Advisory Group (LAG) is a subcommittee of the NGAC

## LAG Membership (below):

| Name  | Organization                        |
|---|-------------------------------------|
| <b>Kass Green (Subcommittee chair)</b>        | Kass Green & Associates             |
| John Copple                                   | Sanborn Map Company                 |
| Dave Cowen (NGAC Chair)                       | University of South Carolina        |
| Joanne Gabrynowicz                            | University of Mississippi           |
| Rick Landenberger                             | AmericaView                         |
| <b>Roger Mitchell (Subcommittee co-chair)</b> | MDA Federal                         |
| Rebecca Moore                                 | Google                              |
| Tony Spicci                                   | State of Missouri                   |
| Corry Springer                                | Ball Aerospace & Technologies Corp. |
| Darrel Williams                               | Global Science & Technology, Inc.   |
| Tony Willardson                               | Western States Water Council        |

# 2012 Direction from DOI

**The NGAC Landsat Advisory Group (LAG) will provide advice to the Federal Government, through the NGAC, on the requirements, objectives and actions of the Landsat Program as they apply to continued delivery of societal benefits for the Nation and the global Earth observation community. The LAG is requested to provide advice and recommendations on Landsat-related issues for consideration by the NGAC.**

**Two tasks were completed last year:**

- 1. Provide advice on whether or not the US government should charge for Landsat data.**
- 2. Provide advice concerning the economic benefits of Landsat data.**

# Produced Two White Papers

## National Geospatial Advisory Committee – Landsat Advisory Group Statement on Landsat Data Use and Charges<sup>1</sup>

The value of Landsat data is internationally recognized as indispensable to science, natural resource management, commerce, security, foreign policy, agriculture, and education. Since 1972, Landsat data have become a critical part of U.S. infrastructure. Like GPS, the National Weather Service, and the National Oceanic and Atmospheric Administration's (NOAA) operational weather satellites, Landsat provides a huge return on the taxpayers' investment.<sup>2</sup> Landsat enables more efficient science and natural resources management. Its ability to monitor worldwide land surface changes is a proven public good.<sup>3</sup> Landsat benefits far outweigh the cost. It is in the U.S. national interest to fund and distribute Landsat data to the public without cost now and in the future.

**Overarching recommendation:** Landsat data must continue to be distributed at no cost.

### Impacts of Charging for Landsat Data

1. **Would severely restrict data use.** The Department of the Interior (DOI) stopped charging for Landsat data in 2008 and its use skyrocketed, soaring from 38 to over 5700 scenes per day.<sup>4</sup> Imposing charges will again severely restrict data use.
2. **Would violate existing OMB guidelines, Federal Law, OSTP, and U.S. National Space Policy.** Cost-free Landsat data is consistent with existing Office of Management and Budget (OMB) guidelines, Federal Law, Office of Science and Technology (OSTP), and U.S. National Space Policy. No charge should be made for a service when the service can be considered primarily as benefiting broadly the general public.<sup>5</sup>
3. **Would require statutory changes.** Imposing a data charge requires statutory revision. The Land Remote Policy Act mandates Landsat data be made available at no more than the cost of fulfilling a user request (COFUR). COFUR "shall not include any acquisition, amortization, or depreciation of capital assets originally paid for by the United States Government or other costs not specifically attributable to fulfilling user requests."<sup>6</sup>
4. **Would cost more than the amount of revenue generated by the charges.** Technology has automated the data request and distribution process to operate at virtually no cost for fulfilling orders because the internet cost of filling requests is zero. However, collecting payments incurs costs unrelated to the data because users incur costs from using authorized payment mechanisms and DOI incurs costs to invoice, track, and process payments.
5. **Would create a circular payment basis for public agencies.** Landsat data users are overwhelmingly public agencies. Charging them for data results in circular payments among government entities.
6. **Would stifle innovation and business activity that creates jobs.** Increased use is the starting point of value. Free data catalyzes innovation. It leads to unpredictable applications, products, and decision-making that requires investigation and data analysis within specific disciplines.<sup>7</sup> The Government's and taxpayers' return is downstream of data access. Free data fuels significant business activity that creates jobs, generates tax revenue, protects property, protects the environment, and saves lives.<sup>8</sup>
7. **Would inhibit data analysis in scientific and technical analyses.** Free data availability results in major direct and indirect gains in efficiency. Data analysis in scientific and technical analyses renders information that, in turn, more efficiently applies science and technology to practical problems and issues.<sup>9</sup>
8. **Would negatively impact international relations relating to national, homeland, and food security.** Landsat provides a continuous transparent global view of resources over time, allowing for the

## National Geospatial Advisory Committee – Landsat Advisory Group The Value Proposition for Ten Landsat Applications<sup>1</sup>

Landsat imagery provides the United States and the world with continuous, consistent monitoring of critically important global resources. Supplying an unprecedented record of global land cover status and change for the last 40 years, Landsat imagery is an essential "national asset" which has made and continues to make critical "contributions to U.S. economic, environmental, and national security interests."<sup>2</sup> However, because Landsat imagery is primarily utilized by non-commercial entities – thereby not passing through a market where its value is set by market forces – estimating the economic value of Landsat data is an ongoing challenge. Accordingly, the Department of Interior recently requested that the Landsat Advisory Group of the National Geospatial Advisory Committee provide advice to the Department "concerning the economic benefits of Landsat data."<sup>3</sup> There are thousands of users and hundreds of applications using Landsat in the United States, with strong use internationally as well. This white paper provides estimates of the economic value of ten (10) uses of Landsat data and summarizes recent estimates of the economic value of Landsat data from two large-scale surveys. Both approaches clearly show that the annual economic value of Landsat data far exceeds the cost of building, launching, and managing Landsat satellites and sensors.

### 1. Productivity Savings from Ten Uses of Landsat

The reason people use Landsat is because it is more efficient than any other technology to accomplish the same decision support requirements. After nearly 40 years of operation almost all of the "kick the tire" uses have either proven successful or been discontinued because of higher costs than alternatives. The purpose of this document is to outline ten (10) decision processes that would be significantly more expensive without an operational Landsat-like program. Many of these processes are associated with the U.S. government and save significant amounts of money compared to other methods of accomplishing the same objective. They also include non-governmental science applications where scarce research dollars cannot be wasted on inefficient technologies. The estimates of annual efficiency savings are conservative and can be substantiated upon request. These ten Landsat applications alone produce savings of \$180 million to over \$266 million per year for the Federal and State governments.

**Summary Table: Estimated Productivity Savings from Ten Uses of Landsat\***

| Landsat Application                              | Estimated Annual Efficiency Savings |
|--|-------------------------------------|
| 1. Monitoring Consumptive Outdoor Water Usage    | \$20 - \$73 million                 |
| 2. U.S. Government Mapping                       | over \$100 million                  |
| 3. Forest Health Monitoring                      | \$12 million                        |
| 4. National Agricultural Commodities Mapping     | over \$4 million                    |
| 5. Flood Mitigation Mapping                      | over \$4.5 million                  |
| 6. Forest Fragmentation Detection                | over \$5 million                    |
| 7. Forest Change Detection                       | over \$5 million                    |
| 8. World Agriculture Supply and Demand Estimates | over \$3 - \$5 million              |
| 9. Landsat Support for Fire Management           | \$28 - \$30 million                 |
| 10. Coastal Change Analysis Program              | \$1.5 million                       |

\* This table shows the estimated annual efficiency savings of ten selected Landsat applications. The total annual economic value of Landsat data has recently been estimated at over \$1.7 billion (see Section 2, "Recent Studies on the Economic Value of Landsat Data," Page 6).

# LAG's 2013 Assignment

## FGDC Guidance to NGAC: Landsat Study Questions

- 1) **Product Improvement:** Review current and future Landsat data and information product specifications, and advise USGS on potential means of modifying the current products to make them more useful to commercial information providers and value-added analysts.
- 2) **Cloud:** Recommend potential new approaches to data management and distribution (e.g., means to “bring algorithms to the data”, rather than “bring data to algorithms”; and use of “the cloud” and other new technology developments).
- 3) **Industry benefits:** Review and document the benefits to Industry of the U.S. Government continuing to build and operate future Landsat systems.
- 4) **Foreign partnerships:** Review and make recommendations regarding partnership opportunities with existing commercial or foreign missions to maintain and augment DOI/USGS land imaging capability.
- 5) **New applications:** Based on L8 improvements, in collaboration with the Landsat Science Team, identify potential new applications of image data.
- 6) **NRC Report:** Review and comment on the National Research Council report on implementing a sustained Land Imaging Program.

# Landsat Study Questions –

## LAG Prioritization (by poll)

Because of the expansive nature of the Study Questions, LAG members prioritized them differently than USGS: 5, 1, 3, 4, 2 (and 6)

- 1) **Product Improvement:** Lead: Peter Becker. Members: Tony Spicci, Roger Mitchell
- 2) **Cloud:** Lead: Darrel Williams. Members: Peter Becker (ESRI), Tony Willardson (Western States Water Council), Rebecca Moore (Google)
- 3) **Industry benefits:** Lead: Corey Springer. Members: Darrel Williams, Kass Green, Rebecca Moore
- 4) **Foreign partnerships:** Lead: John Copple. Members: Darrel Williams, Corey Springer, Joanne Gabrynowicz
- 5) **New applications:** Lead: Tony Spicci. Members: John Copple, Roger Mitchell, Tony Spicci
- 6) **NRC Report:** 1<sup>st</sup> had to wait on report delivery; Lead: Dave Cowen

Outcome to be brief white papers like the two that LAG generated last year for “Economic Value” and “Don’t Go Back to Charging for Data”

# Landsat Study Questions – Status Update

LAG appears to be overwhelmed by the assignment – progress has been very slow.

- 1) **Product Improvement:** ???
- 2) **Cloud:** Draft report written and circulated for internal review.
- 3) **Industry benefits:** One telecon held.
- 4) **Foreign partnerships:** No action to best of my knowledge.
- 5) **New applications:** Perhaps waiting for results from Sci Team?
- 6) **NRC Report:** Draft report written and submitted for LAG review.

Goal was to provide drafts for all 6 items in advance of next NGAC meeting → projected for Dec. 2013?